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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/539,318	Applicant(s) GERRITS ET AL.
	Examiner DOUGLAS C. GODBOLD	Art Unit 2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 16 December 2009.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____
- 5) Notice of Informal Patent Application
 6) Other: _____

DETAILED ACTION

1. This Office Action is in response to correspondence filed December 16, 2009 in reference to application 10/529,318. Claims 1-10 are pending and have been examined.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 16, 2009 has been entered.

Response to Amendment

3. The amendment filed December 16, 2009 has been accepted and considered in this office action. Claims 1, 8 and 10 have been amended.

Response to Arguments

4. Applicant's arguments see Remarks, filed December 16, 2009, with respect to the 101 rejections of claims 8-10 have been fully considered and are persuasive. The rejection under 35 U.S.C. 101 of claims 8-10 has been withdrawn.

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5. Applicant's arguments filed December 16, 2009 regarding rejections under 35 U.S.C. 102 have been fully considered but they are not persuasive.

6. Regarding applicant's arguments, see remarks page 7, that Tsutsui2 does not teach the limitations as amended, the examiner respectfully disagrees. The newly added limitations "without regard to the at least one of the candidate sinusoids within said local frequency band that is excluded" is contrary to the written disclosure of the instant application, and thus constitutes new matter as laid out below. The specification requires that the "selecting" of a sinusoid is performed on the basis or a ratio that includes the amplitude of the candidate sinusoid. (see page 8 lines 1-15.). Given that the selection is clearly made using amplitude of the candidate sinusoid, the examiner believes Tsutsui2 still teaches the limitations.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The new limitations added to claims 1, 8 and

10 specify that the "selecting" is performed :without regard to the at least one of the candidate sinusoids within said local frequency band that is excluded. However this is unsupported in the original disclosures. Pages 6-8 discuss the mathematics of defining a band around candidates, combining amplitudes, and then performing the "selecting" step. The selection step is performed using a ratio of the difference of the amplitude of the candidate sinusoid minus the combined amplitude, over the standard deviation for the band, see equation 8. No other frequency based selections are disclosed. Thus the newly added limitations appear to be opposite the teachings of the specification and are not supported by the original disclosure.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsutsui et al (US Patent 5,717,821) from hereon referred to as Tsutsui2 to avoid confusion with the Tsutsui reference used in the prior rejection.

3. Consider claims 1 and 8: Tsutsui2 discloses a method and audio encoder for encoding an audio signal by representing at least part of said audio signal by a plurality

of sinusoids (see Abstract, frequency components are sinusoids by definition), the method comprising the steps of:

performing an analysis on a first segment of said audio signal (waveform is transformed to frequency components; column 10 lines 37-40);

selecting candidate sinusoids based on said analysis (N spectrum signals inputted into tone separating component; column 12 line 24. A component is considered when its amplitude is greater to that of surrounding amplitudes when locally view; column 12 line 30);

defining for at least one of the candidate sinusoids a local frequency band around a frequency of said at least one candidate sinusoid (neighboring spectrum components; column 12 line 36);

combining amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within the local frequency band is excluded (Figures 4, Step 6, energy value of neighboring spectrum is summed; column 13 lines 3-6.); and

selecting said candidate sinusoid as a selected sinusoid in dependence on the combination of amplitudes without regard to the at least one of the candidate sinusoids within said local frequency band that is excluded (Steps S8 and S9, where ratio is considered and tonality is registered; column 13 lines 3-35.).

4. Consider claim 2: Tsutsui2 discloses a bandwidth of said local frequency band around the frequency of said at least one candidate sinusoid is defined in dependence

on the frequency of said at least one candidate sinusoid (Figure 5 shows the bands selected around frequency components B1-B5 that grow wider as they get higher, also column 2 lines 10-28).

5. Consider claim 3: Tsutsui2 discloses dependence on the frequency of said candidate sinusoid is based on a human's perception of audio (see column 2 lines 10-28, where Tsutsui discusses taking the characteristics of human hearing into account).

6. Consider claim 4: Tsutsui2 discloses candidate sinusoid is selected as a selected sinusoid when its amplitude of said candidate sinusoid is significant with regard to said combination of amplitudes (Figures 4, Step 6, energy value of neighboring spectrum is summed; column 13 lines 3-6.), said significance being evaluated by thresholding a difference between the amplitude of said candidate sinusoid and a weighted mean amplitude of frequency components within the local frequency band of said candidate sinusoid from which at least one of the candidate sinusoids within said local frequency band is excluded (Steps S8 and S9, where ratio is considered in regards to Threshold R and tonality is registered; column 13 lines 3-35, T).

7. Consider claim 5: Tsutsui2 discloses candidate sinusoid is selected as a selected sinusoid when an amplitude of said candidate sinusoid is significant with regard to said combination of amplitudes, (Figures 4, Step 6, energy value of neighboring spectrum is

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summed; column 13 lines 3-6) said significance being evaluated by thresholding a ratio (X/Y) of:

a difference between the amplitudes of said candidate sinusoid and a weighted mean amplitude of frequency components within the local frequency band of said candidate sinusoid's local frequency band from which at least one of the candidate sinusoids within said local frequency band is excluded; (Figures 4, Step 6, energy value of neighboring spectrum is summed X; column 13 lines 3-6) and

a weighted deviation of the amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within said local frequency band is excluded amplitudes without regard to the at least one of the candidate sinusoids within said local frequency band that is excluded (absolute value of spectrum of band Y; column 13 lines 5-9).

8. Consider claim 10: Tsutsui2 disclose means for obtaining an audio signal (see Figure 1, 600), an audio encoder for encoding said audio signal to obtain an encoded audio signal (see Figure 1, 601-506), and

means for performing an analysis on a first segment of said audio signal (waveform is transformed to frequency components; column 10 lines 37-40);

means for selecting candidate sinusoids based on said analysis (N spectrum signals inputted into tone separating component; column 12 line 24. A component is considered when its amplitude is greater to that of surrounding amplitudes when locally view; column 12 line 30);

means for defining for at least one of the candidate sinusoids a local frequency band around a frequency of said at least one candidate sinusoid (neighboring spectrum components; column 12 line 36);

means for combining amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within the local frequency band is excluded (Figures 4, Step 6, energy value of neighboring spectrum is summed; column 13 lines 3-6.); and

means for selecting said candidate sinusoid as a selected sinusoid in dependence on the combination of amplitudes without regard to the at least one of the candidate sinusoids within said local frequency band that is excluded (Steps S8 and S9, where ratio is considered and tonality is registered; column 13 lines 3-35.)

a formatting unit for formatting the encoded audio signal into a format suitable for storage and/or transmission (606-609).

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 6, 7, and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsui2 in view of McAulay et al (US Patent 5,054,072).

11. Consider claims 6 and 9: Tsutsui2 does not specifically disclose a further selection out of the selected sinusoids which comprises the steps of:

determining for at least one of the selected sinusoids a phase consistency defined by an extent to which a phase of said selected sinusoid at a certain moment in time can be predicted from a phase of said selected sinusoid determined at another moment in time; and

further selecting said selected sinusoid as a further selected sinusoid when its phase consistency is above a predetermined threshold

In the same field of Audio Coding, McAulay teaches a further selection out of the selected sinusoids which comprises the steps of:

determining for at least one of the selected sinusoids a phase consistency defined by an extent to which a phase of said selected sinusoid at a certain moment in time can be predicted from a phase of said selected sinusoid determined at another moment in time (see Col. 2, lines 26 - 40 where McAulay discusses predicting phases across frames and Col. 5, lines 10-20, where McAulay discusses the phase calculation); and

further selecting said selected sinusoid as a further selected sinusoid when its phase consistency is above a predetermined threshold (see Col. 7, lines 19-27, where McAulay discusses phase modeling and a required minimum value, therefore a threshold).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to consider phase as taught by McAulay in the system of Tsutsui2 in order to provide a more accurate and realistic sounding coded signal.

12. Consider claim 7: Tsutsui2 does not specifically disclose determining phase consistency comprises the steps of:

segmenting a third segment of said audio signal into at least a first and a second part;

determining the actual phases of said selected sinusoid in at least the first and the second part;

using the actual phase in the first part to serve as the input for predicting the actual phase in the second part; and

determining said selected sinusoid's phase consistency based on a prediction error between the actual phase and the predicted phase in the second part.

In the same field of audio coding McAulay disclose determining phase consistency comprises the steps of:

segmenting a third segment of said audio signal into at least a first and a second part (see Col. 8, lines 4-10, where McAulay discusses pitch periods);

determining the actual phases of said selected sinusoid in at least the first and the second part (see Col. 8, lines 8-15, where McAulay discusses evaluating the phase after a determination);

using the actual phase in the first part to serve as the input for predicting the actual phase in the second part (see Col. 8, lines 30-35, where McAulay discusses determining residual phases); and

determining said selected sinusoid's phase consistency based on a prediction error between the actual phase and the predicted phase in the second part (see Col. 7, lines 30-40, where McAulay discusses selection based on minimizing the error).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to consider phase as taught by McAulay in the system of Tsutsui2 in order to provide a more accurate and realistic sounding coded signal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS C. GODBOLD whose telephone number is (571)270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DCG

/Richemond Dorvil/
Supervisory Patent Examiner, Art Unit 2626